Future No-Build

September 19, 2016

LOWER MYSTIC REGIONAL WORKING GROUP

Transportation Models

- Boston MPO's Regional Transportation Model
  - Forecast future trips and test alternatives
- Synchro Model
  - Intersection Analysis
- Transmodeler
  - I-93 simulation and analysis

* AM Peak Period and Peak Hour Analysis

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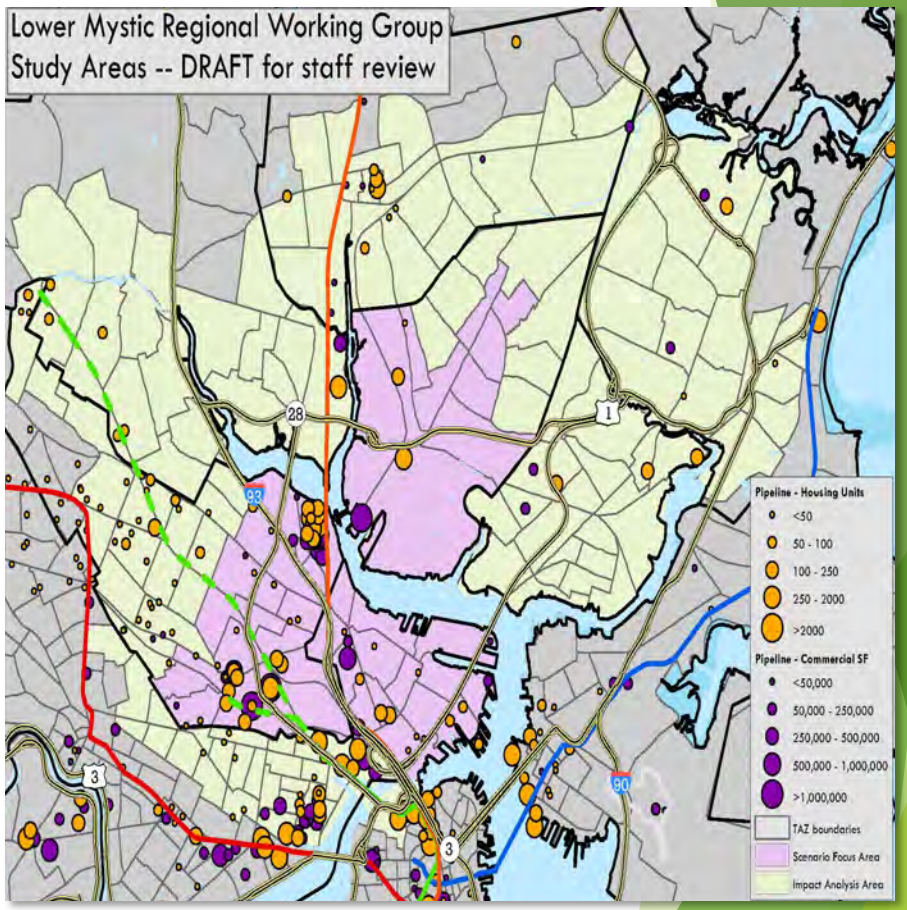
Transportation Analysis Zone (TAZ's)

Community	# of TAZ's
Boston* (Entire City)	19 (447)
Chelsea	23
Everett	18
Somerville	46
Cambridge* (Entire City)	27 (104)
Malden	30
Medford	29
Revere	24

** These communities shows totals only from LMRWG study area TAZs.*



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Transportation Model Demographics

	Existing*	2030 No-Build*	2040 No-Build*
Population	302,275	366,390 (21.2%)	392,655 (29.9%)
Households	122,475	151,465 (23.7%)	164,690 (34.5%)
Employment	137,150	154,025 (12.3%)	164,190 (19.7%)
Total Daily Trips	**1,949,850**	**2,303,160 (18.1%)**	**2,491,340 (27.8%)**
AM Peak Period	**219,890**	**262,860 (19.5%)**	**288,335 (31.1%)**

** Totals only from LMRWG study area TAZs.*

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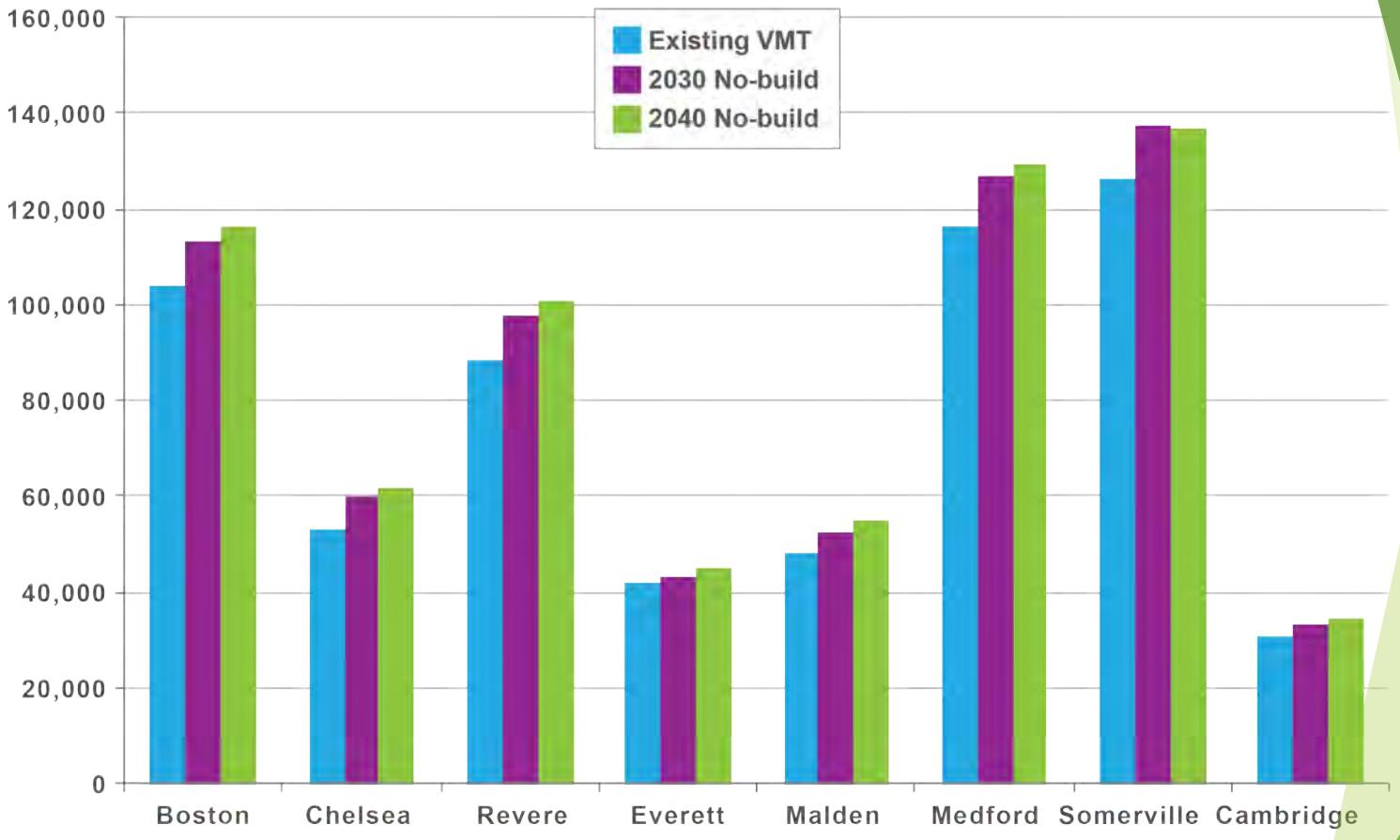
Vehicle Miles Traveled (VMT)



Total Study Area VMT:

Existing - 609,345 miles
2030 No Build - 664,685 miles (9.1%)
2040 No Build - 680,490 miles(11.7%)

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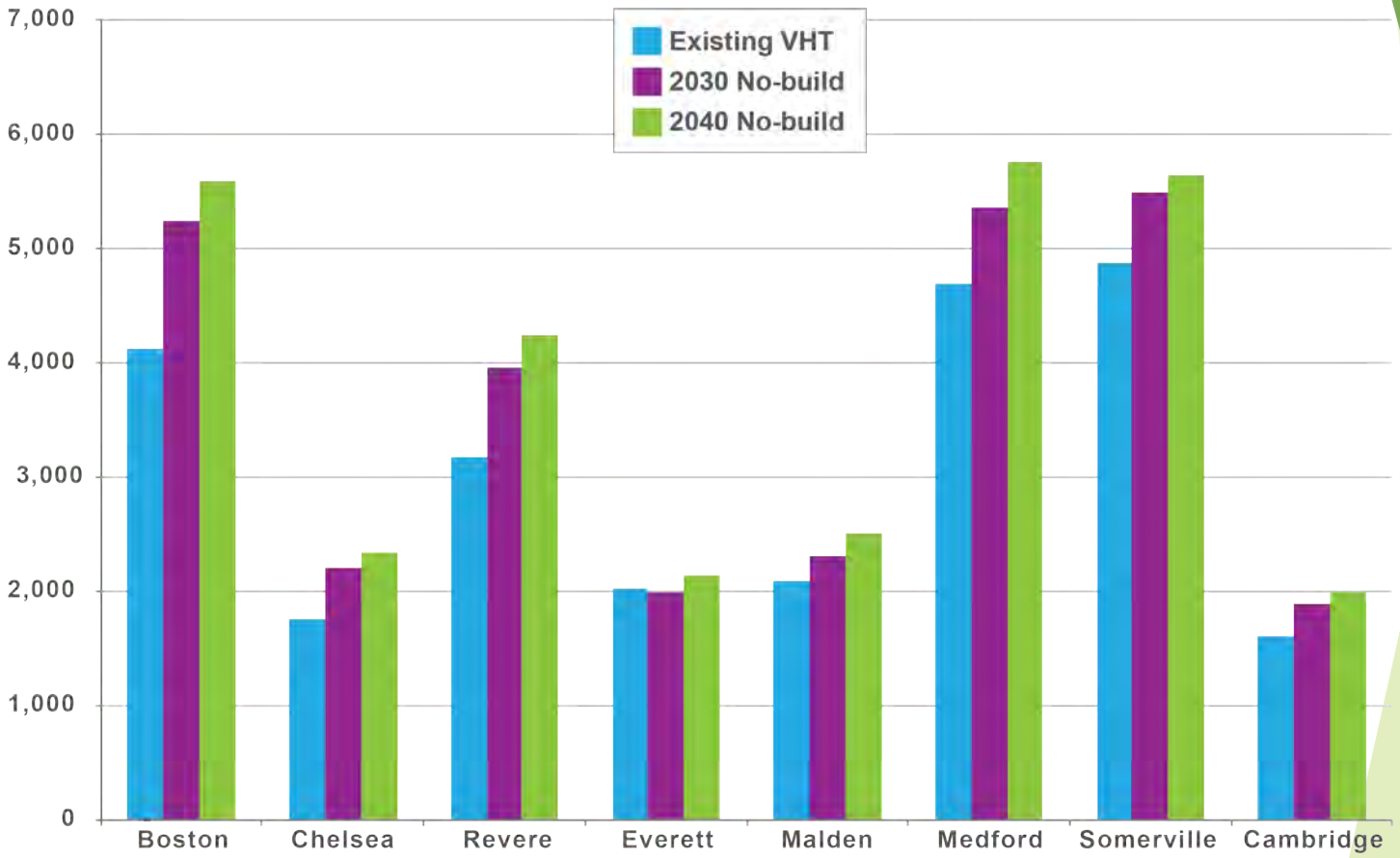
Vehicle Hours Traveled (VHT)



Total Study Area VHT:

Existing - 24,340 hours
2030 No Build - 28,450 hours (16.9%)
2040 No Build - 30,210 hours (24.1%)

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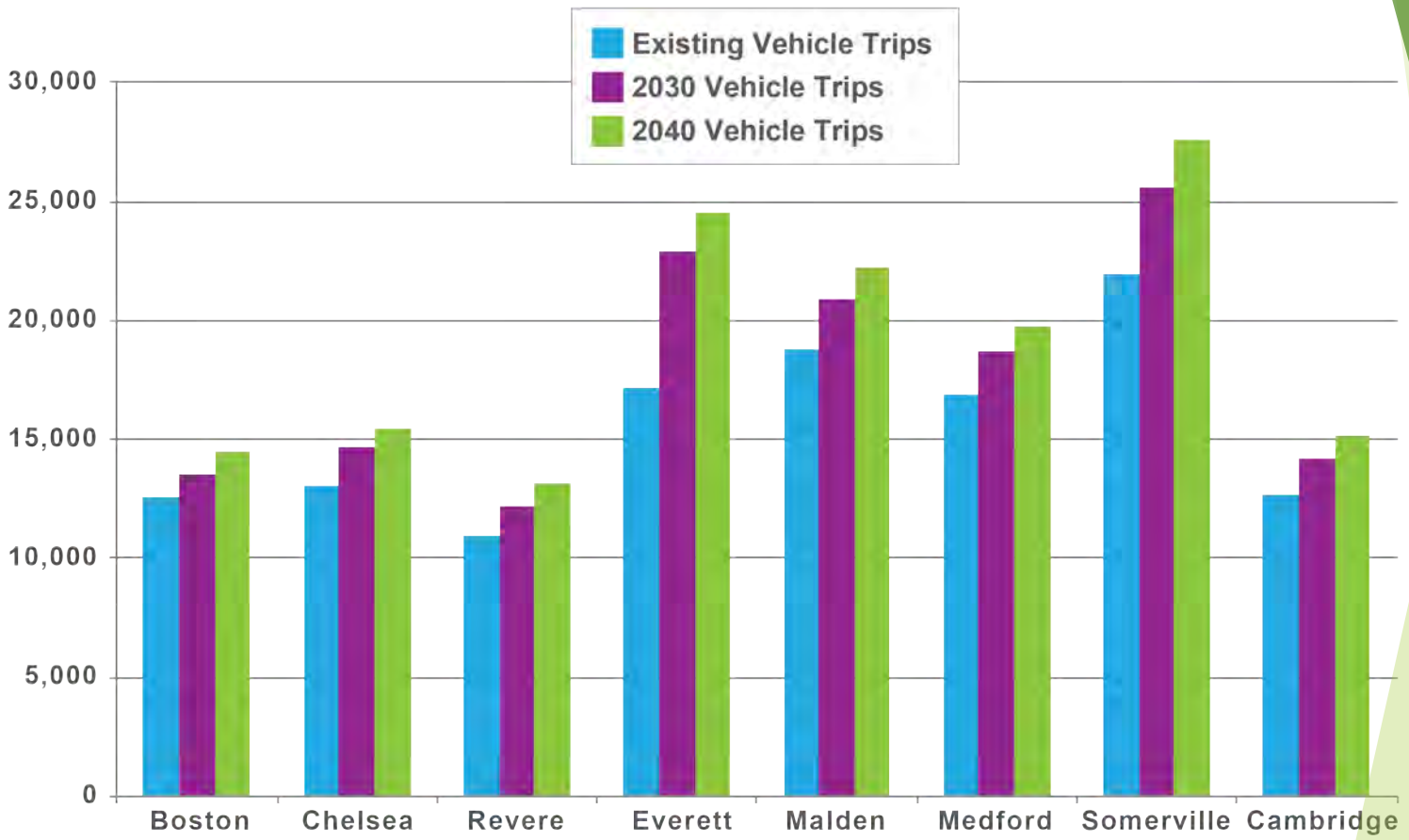
AM Vehicle Trips



Total Study Area AM Vehicle Trips:

Existing – 123,955

2030 No-Build – 141,875 (14.5%)

2040 No-Build – 151,740 (22.4%)

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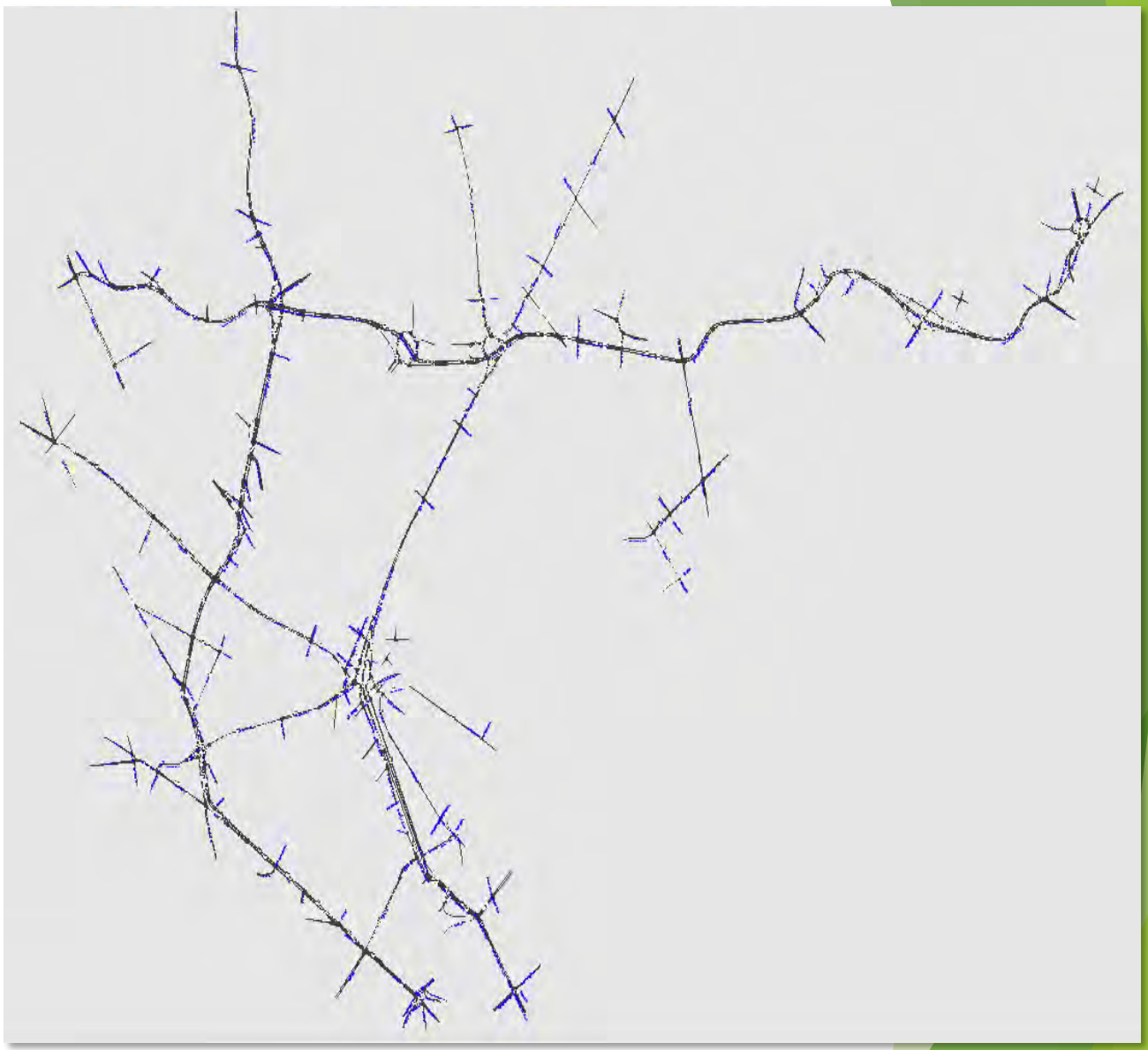
Synchro Model Network



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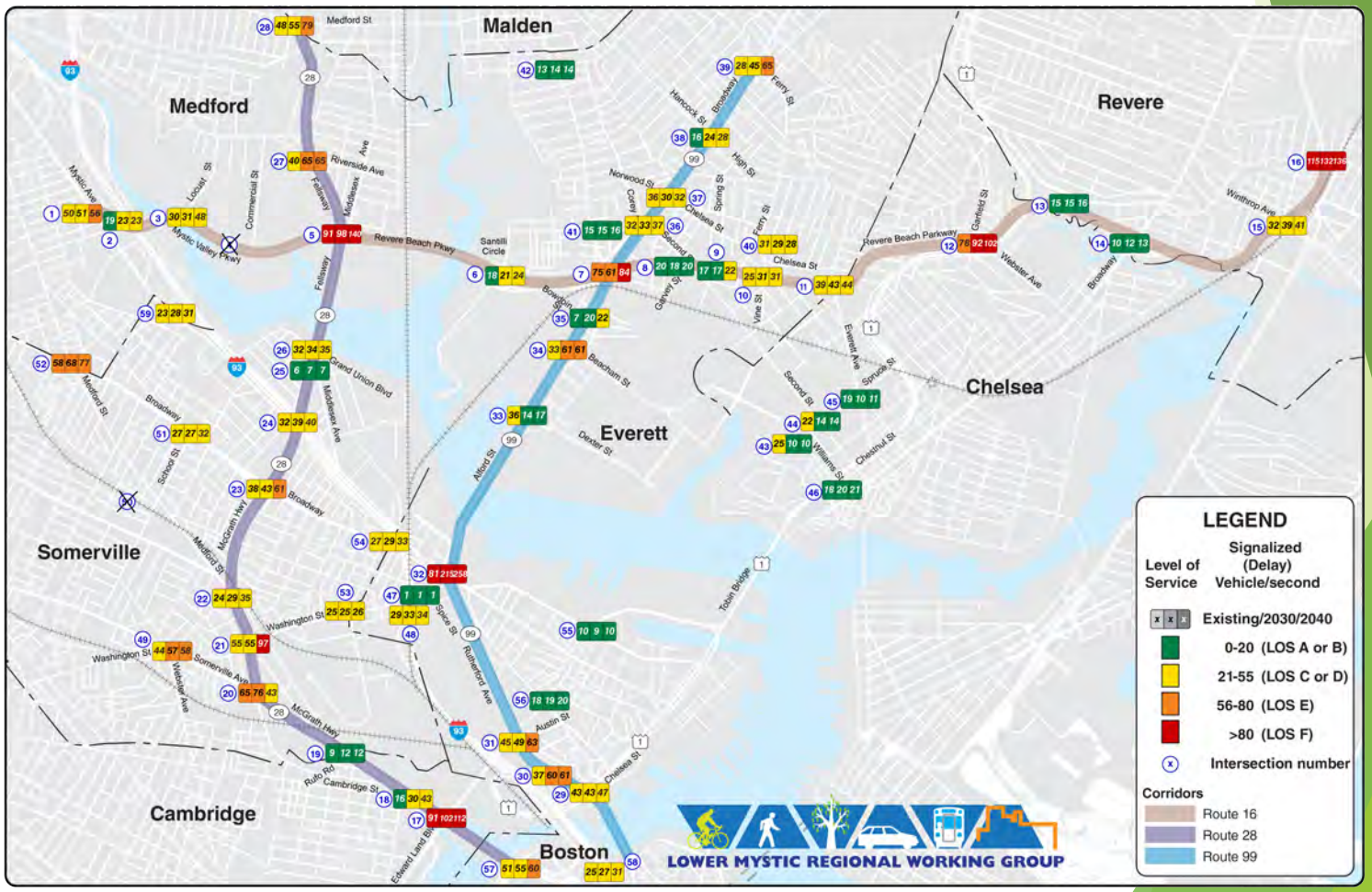
LOS and Total Intersection Delay
AM Peak Hour
Existing Conditions, 2030 No-Build and 2040 No-Build



Synchro Model

- 57 Total Locations
  - New: Mystic Avenue (Route 38) at I-93 Ramps - Somerville
- LOS F locations:
  - Existing - 4 locations
  - 2030 - 5 locations
  - 2040 – 7 locations
- Overall intersection volumes:
  - Existing – 163,110 vehicles
  - 2030 – 172,465 vehicles (5.7%)
  - 2040 – 179,673 vehicles (10.2%)
- Overall intersection delays:
  - Existing – 1,965 seconds
  - 2030 – 2,315 seconds (17.8%)
  - 2040 – 2,650 seconds (34.7%)

* AM Peak Hour Analysis

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Route 16 Corridor

- 15 Corridor Locations
- LOS F locations:
  - Existing - 2 locations
  - 2030 - 3 locations
  - 2040 – 4 locations
- Overall intersection volumes:
  - Existing – 53,175 vehicles
  - 2030 – 55,445 vehicles (4.3%)
  - 2040 – 57,385 vehicles (7.9%)
- Overall intersection delays:
  - Existing – 635 seconds
  - 2030 – 685 seconds (7.9%)
  - 2040 – 800 seconds (26.2%)

* AM Peak Hour Analysis

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Route 99 Corridor

- 13 Corridor Locations
- LOS F locations:
  - Existing - 1 locations
  - 2030 - 1 locations
  - 2040 – 2 locations
- Overall intersection volumes:
  - Existing – 35,335 vehicles
  - 2030 – 37,445 vehicles (6.0%)
  - 2040 – 38,735 vehicles (9.6%)
- Overall intersection delays:
  - Existing – 495 seconds
  - 2030 – 680 seconds (38.1%)
  - 2040 – 805 seconds (63.2%)

* AM Peak Hour Analysis

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Route 28 Corridor

- 13 Corridor Locations
- LOS F locations:
  - Existing - 2 locations
  - 2030 - 2 locations
  - 2040 – 3 locations
- Overall intersection volumes:
  - Existing – 47,425 vehicles
  - 2030 – 51,715 vehicles (9.0%)
  - 2040 – 54,345 vehicles (14.6%)
- Overall intersection delays:
  - Existing – 505 seconds
  - 2030 – 600 seconds (18.7%)
  - 2040 – 690 seconds (35.9%)

* AM Peak Hour Analysis

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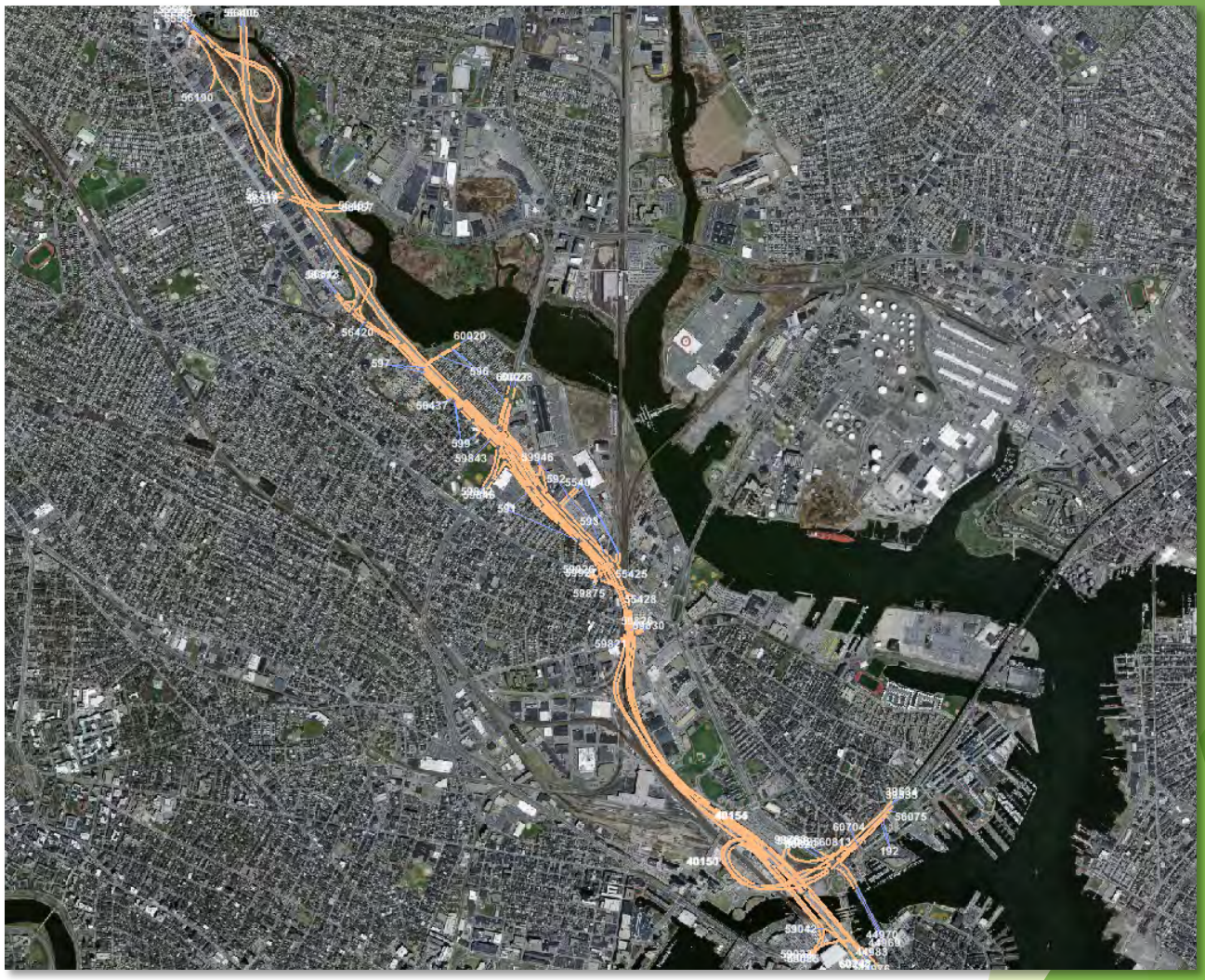
I-93

Transmodeler Network



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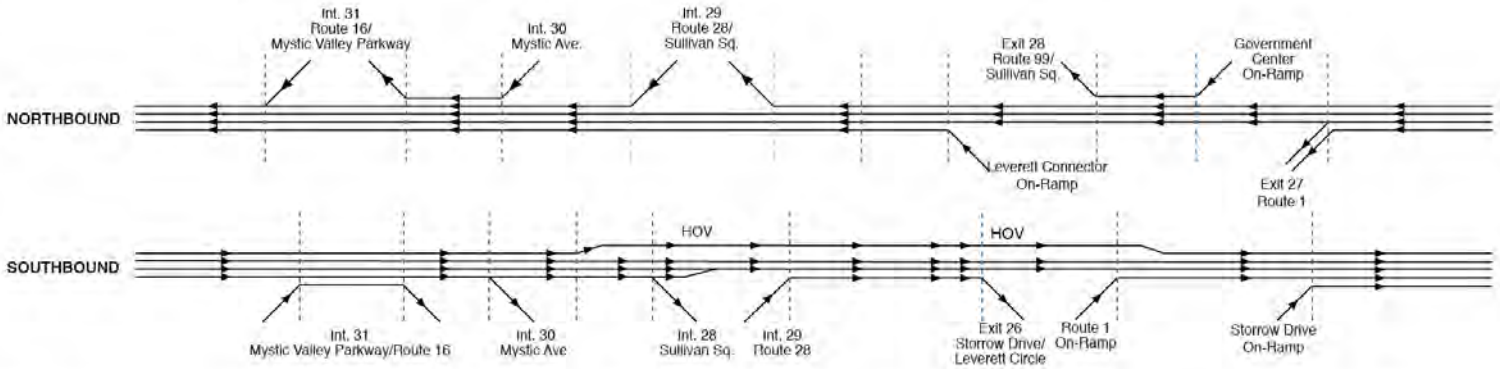
I-93 AM Peak-Hour Highway Capacity Analyses (Existing Conditions)

Highway Section:	(11)	(10)	(9)	(8)	(7)	(6)	(5)	(4)	(3)	(2)	(1)
Analysis Type:	Merge	Basic	Weave	Merge	Basic	Diverge	Merge	Basic	Weave	Basic	Diverge
Level of Service:	C	C	B	B	D	E	D	D	C	D	D
Density (pc/mi/ln):	24.5	25.2	18.0	15.6	31.3	42.8	29.4	32.5	26.7	30.9	28.4
Average Speed (mph):	54	55	55	55	46	42	44	45	52	47	43



Highway Section:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Analysis Type:	Basic	Weave	Diverge	Basic	Diverge	Basic	Weave	Basic	Merge	Merge
Level of Service:	E	E	E	F	E	F	F	E	E	E
Density (pc/mi/ln):	43.6	42.7	62.3	64.0	164.7	166.1	122.4	43.8	61.4	47.9
Average Speed (mph):	38	38	33	20	10	10	14	42	35	34

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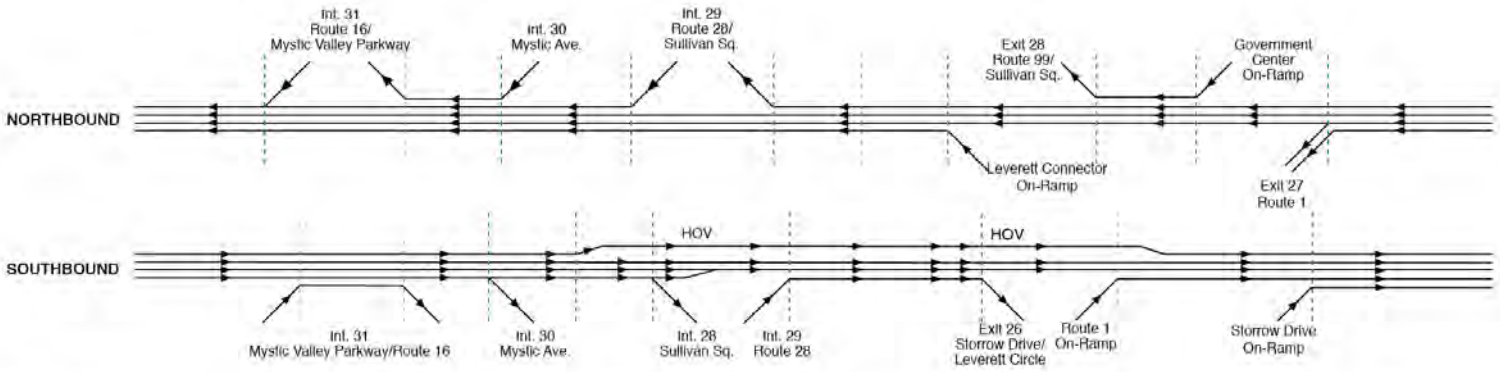
I-93 AM Peak-Hour Highway Capacity Analyses (2030 No-Build)

Highway Section:	(11)	(10)	(9)	(8)	(7)	(6)	(5)	(4)	(3)	(2)	(1)
Analysis Type:	Merge	Basic	Weave	Merge	Basic	Diverge	Merge	Basic	Weave	Basic	Diverge
Level of Service:	C	D	C	B	D	E	D	D	C	D	D
Density (pc/mi/ln):	26.2	26.0	21.7	18.9	32.1	39.6	28.6	34.7	27.0	32.6	34.2
Average Speed (mph):	54	54	55	55	47	43	44	45	50	44	42



Highway Section:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Analysis Type:	Basic	Weave	Diverge	Basic	Diverge	Basic	Weave	Basic	Merge	Merge
Level of Service:	F	E	E	F	F	F	F	F	E	E
Density (pc/mi/ln):	121.2	128.0	169.1	147.2	180.1	162.7	115.5	45.7	66.6	50.9
Average Speed (mph):	12	10	9	7	7	10	15	42	34	34

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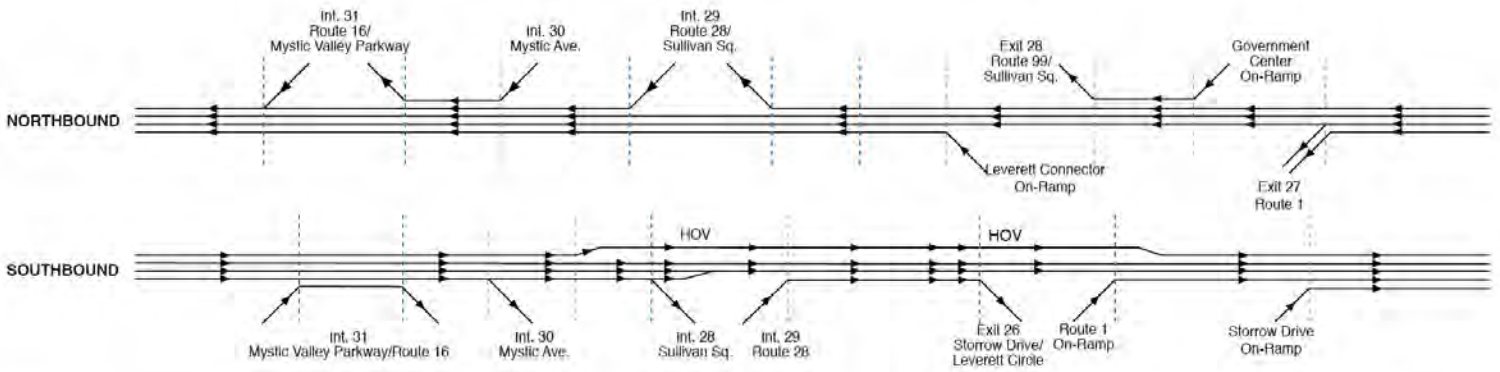
I-93 AM Peak-Hour Highway Capacity Analyses (2040 No-Build)

Highway Section:	(11)	(10)	(9)	(8)	(7)	(6)	(5)	(4)	(3)	(2)	(1)
Analysis Type:	Merge	Basic	Weave	Merge	Basic	Diverge	Merge	Basic	Weave	Basic	Diverge
Level of Service:	D	C	C	B	E	E	D	D	D	D	D
Density (pc/mi/ln):	28.5	24.7	22.6	19.6	35.3	37.7	31.0	33.2	28.8	32.7	33.5
Average Speed (mph):	54	54	54	54	46	43	44	45	51	45	42



Highway Section:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Analysis Type:	Basic	Weave	Diverge	Basic	Diverge	Basic	Weave	Basic	Merge	Merge
Level of Service:	F	E	E	F	F	F	F	F	E	E
Density (pc/mi/ln):	150.2	150.7	179.3	154.0	185.8	169.9	122.3	45.4	69.0	51.9
Average Speed (mph):	9	8	8	7	7	9	14	42	34	34

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Summary

- Vehicle trip growth increased:
  - 2030 – 18.1% from existing
  - 2040 – 27.8% from existing
- VMT increased:
  - 2030 – 9.1% from existing
  - 2040 – 11.7% from existing
- VHT increased:
  - 2030 – 16.9% from existing
  - 2040 – 24.1% from existing
- Intersection volumes increased:
  - 2030 – 5.7% from existing
  - 2040 – 10.2% from existing
- Intersection delays increased:
  - 2030 – 17.8% from existing
  - 2040 – 34.7% from existing
- Failing intersections:
  - 2030 – 1 from existing
  - 2040 – 3 from existing
- I-93 failing segments:
  - 2030 – 3 to 6
  - 2040 – 3 to 6

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Next Steps

- Evaluate Alternative 1 – modified no-build land use
- Develop alternatives 2-5

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Thank you

Questions and Comments

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